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Non Invasive Imaging

ASSOCIATION OF AORTIC STIFFNESS WITH BIOMARKERS OF MYOCARDIAL WALL STRESS AFTER MYOCARDIAL INFARCTION

Poster Contributions
Hall C
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Background: Aortic pulse wave velocity (PWV) was linked to LV-geometry and -function in patients with kidney disease and non-ischemic cardiomyopathy. The role of aortic compliance after acute STEMI is so far unknown. In the present study, we prospectively investigated the relationship of increased aortic stiffness with biomarkers of myocardial wall stress 4 months after STEMI.

Methods: 48 STEMI patients who were reperfused by primary coronary angioplasty underwent cardiovascular magnetic resonance (CMR) at baseline and at 4-month follow-up. The CMR protocol comprised cine-CMR as well as gadolinium contrast-enhanced CMR. Aortic PWV was determined by velocity-encoded, phase-contrast CMR. Blood samples were routinely drawn at baseline and follow-up to determine N-terminal pro-B-type natriuretic peptide (NT-proBNP). In a subgroup of patients, mid-regional pro-adrenomedullin (MR-proADM) and mid-regional pro-A-type natriuretic peptide (MR-proANP) levels were determined.

Results: Patients with a PWV above median (>7.0 m/s) had significantly higher NT-proBNP, MR-proADM and MR-proANP concentrations at 4-month follow-up than patients with a PWV below median (all $p<0.02$). PWV showed moderate to good correlation with NT-proBNP, MR-proAMD and MR-proANP levels 4 months after STEMI (all $p<0.05$). Multivariate analysis revealed PWV, beside myocardial infarct size, as an independent predictor of 4-month NT-proBNP levels after correction for age, creatinine and LV ejection fraction (model r: 0.781, $p<0.001$).

Conclusion: Aortic stiffness is directly associated with biomarkers of myocardial wall stress 4 months after reperfused STEMI, suggesting a role for aortic stiffness in chronic LV-remodeling.